

SHCHEGLOV, N.I.; SOKOL'SKIY, D.V.

Platinum promoted catalytic hydrogenation of liqued styrene on a
nickel skeleton catalyst. Izv.AN Kazakh.SSR.Ser.khim. no.4:40-45
'51. (MLRA 9:5)

(Styrene) (Hydrogenation)

BUKIMAN, A.V.; SOKOL'SKIY, D.V.

Rhodium promoted catalytic hydrogenation of cinnamic acid in presence of nickel on silica gel. Izv.AN Kazakh.SSR.Ser.khim. no.4: 46-52 '51. (MLRA 9:5)

(Cinnamic acid) (Hydrogenation)

USSR/Chemistry - Catalysis Mar 51

"Problem of the Role of the Carrier in Heterogeneous Catalysis," D. V. Sokol'skiy, K. I. Stender (Deceased), Kazakh State U, Alma-Ata

"Zhur Fiz Khim" Vol XXV, No 3, pp 369-374

Examd hydrogenated dimethylacetylenyl carbinol over different amts of Pd deposited on active C (from gas mask). Concluded from study of 2-stage reaction (hydrogenation of triple bond to double, then double to single): (1) Catalytic active centers consist of 2 Pd at, as assumed previously.

185T15

USSR/Chemistry - Catalysis (Contd) Mar 51

(2) Catalyst and carrier form combined crystal lattice-in effect, new catalyst. (3) Anomalous behavior of surface with respect to deg of covering by catalysts necessitates reconsideration of Kobozev's theory of "active complexes."

185T15

185T15

SCIENCE, D. V.

1-0933

OKOLASHY, D. V.

USSR/Chemistry - Acetylene Derivatives Apr 51
Hydrogenation

"Kinetics of the Hydrogenation of Dimethylacetylen-
ylcarbinol on a SkeletonNickel Catalyst," D. V.
Sokol'skiy, L. A. Buvalkina, Kazakh State U ment
S. M. Kirov, Alma-Ata

"Zhur Fiz Khim" Vol XXV, No 4, pp 495-503

Studies kinetics of reaction of dimethylacetylenyl-
carbinol with H in 96% EtOH and in H₂O over skele-
ton Ni catalyst. Finds reaction to be of 0 order,
independent of temp, amt of substance, solvent.

LC 180733

USSR/Chemistry - Acetylene Derivatives Apr 51
(Contd)

Detd: boundary of "kinetic" and "diffusion" regions
in reaction; activation energy in each; change of
boundary due to temp, amt of agitation, solvent;
rate of reaction (overall and in both regions)
due to amt of agitation and catalyst.

Translation W-21169, 25 Jan 52

LC 180733

SOKOL'SKIY, D. V.

USSR/Chemistry - Aniline 1 Jun 51

"Catalytic Reduction of Nitrobenzene," D. V. Sokol'skiy, V. P. Shmonina, Kazakh State University, S. M. Kirov

"Dok Ak Nauk SSSR" Vol LXXVIII, No 4, pp 721-724

Examined reduction of nitrobenzene with H₂ in liquid phase over skeleton Ni catalyst promoted or not promoted with Rh in 0.1 N soln of NaOH or neutral 50% alc. Measured potential of catalyst during reaction. Alkali poisons nonpromoted catalyst and increases rate of reduction in presence of Rh. In alkali on nonpromoted catalyst

184T12

USSR/Chemistry - Aniline (Contd) 1 Jun 51

nitrosobenzene (I) and phenylhydroxylamine (II) are reduced at rates approaching max rate of reduction of nitrobenzene (III). EMF of reduction of I and II is higher by 150-180 v than that of reduction of III. III in reduction passes over I as intermediate stage. As long as III is present, I is not reduced further. When III has been completely converted into I, I in alkali is reduced directly to aniline without passing over II. In absence of alkali, III is reduced directly to II without formation of I. II on forming is reduced further to aniline.

184T12

USSR/Chemistry - Catalysts, Hydro- 11 Aug 51
genation

"Active Carriers in Hydrogenation," D. V. Sokol'skiy, Kazakh State U imeni S. M. Kirov

"Dok Ak Nauk SSSR" Vol LXXIX, No 5, pp 823-826

Highly active hydrogenation catalysts can be obtained by depositing Pd or Pt on Os or Ru black. Os and Ru activate the double bond, while Pd and Pt activate hydrogen. This assumption was confirmed by hydrogenating dimethylacetylenylcarbinol (I) in 96 % alc. With Pt-BaSO₄, the rate of hydrogenation increases when triple bonds are no longer

210726

USSR/Chemistry - Catalysts, Hydro- 11 Aug 51
genation (Contd)

present. Raising concn of I reduces rate of hydrogenation of triple bond and increases that of the double bond. Use of Pt-(Os-BaSO₄) does not change rate of hydrogenation of triple bond, but strongly increases that of the double bond. Effect of concn of I is the same. With Pd-(Ru-BaSO₄), Ru does not affect the rate of hydrogenation of the triple bond, but reduces the time of hydrogenation of the double bond.

210726

SOKOL'SKIY, D. V.

1. SOKOL'SKIY, D. V.; BOLNEHOVETINA, Ye. G.; CHERNASOV, R. I.
2. USSR (600)
4. Cottonseed Oil
7. Hydrogenation of cottonseed oil with a copper-chrome oxide catalyst and with a copper-nickel oxide catalyst on a chrome oxide carrier, Masl. zhir. prom., 17, No. 6, 1952.
9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

SERENIY, D.V., professor; GOLODOV, F.G.; SEMIN, A.V.

Hydrogenation of cottonseed oil with Cu-Al catalyst in a carrying agent. Masl.-zhir.prom. 17 no.6-2 Ag '98. (MIRA 10:9)

1. Kazanskii gosudarstvennyi universitet imeni S.M.Kirova.
(Cottonseed oil) (Hydrogenation)

USSR/Chemistry - Hydrogenation,
Catalysts

Apr 52

"The Kinetics of Hydrogenation of Cinnamic Acid,"
D. Sokol'skiy, L. Buvalkina, A. Bukhman, Chair
of Catalysis and Tech Chem, Kazakh State U imeni
S. M. Kirov

"Zhur Obshch Khim" Vol XXII, No 4, pp 558-563

Investigated the effect of stirring on the kinetics
of hydrogenation of cinnamic acid over skeleton
nickel in a soln of 96% ethyl alc. Found that
hydrogenation of cinnamic acid proceeds in the
"kinetic" region and does not depend on the in-
crease in the intensity of stirring, starting from

224T28

300 oscillations per min of the vessel. The re-
action on cinnamic acid is of the 1st order. The
energy of activation of the process is 9,000 \pm
1,000 cal/mol.

224T28

SOKOL'SKIY, D.

USSR/Chemistry - Hydrogenation Catalysts Nov 52

"Active Carriers in Hydrogenation," D. V. Sokol'skiy,
Kazakh State U imeni S. M. Kirov

"Zhur Obshch Khim" Vol 22, No 11, pp 1934-1941

Os and Ru, which are apparently totally inactive as hydrogenation catalysts, activate double bonds. However, they lack the necessary activated H on their surface. Presence of Pd or Pt in the surface of Os or Ru on BaSO_4 transforms these "active carriers" into highly efficient catalysts. This was fully confirmed by investigating the hydrogenation of dimethylacetylenylcarbinol. On the basis of

238T25

potentiometric measurements pertaining to the hydrogenation of this compd on Pt-BaSO_4 , Pd-BaSO_4 , $\text{Pt-(Os-BaSO}_4)$, and $\text{Pd-(Ru-BaSO}_4)$, the relationship between the rates of hydrogenation of double and triple bonds was investigated and explained by differentiating between the roles of adsorbed and dissolved H. Upon transition to hydrogenation of the double bond on Pt, both the rate of the reaction and the potential increase sharply, because the concn of H in the surface increases due to liberation of active centers which prior to that adsorbed and activated triple bonds.

238T25

SOKOL'SKIY D. V.

USSR/Chemistry - Vinyl Ethers, Catalysts Aug 52

"The Catalytic Hydrogenation of Vinyl Ethers,"
D. V. Sokolsky, M. F. Shostakovsky, B. I. Mikhunbey,
F. G. Golodov, Inst of Org Chem, Acad Sci USSR and
Kazakh SSKU
Zhur Prikl Khim" Vol 25, No 8, pp 867-875

Vinyl ethyl, vinyl isopropyl and vinyl butyl ethers
can be hydrogenated quantitatively by using a low
temp and aq solns, and in the presence of nickel
and Pd/CaCO₃ catalysts. Hydrogenation at temps
close to zero requires little time. With the 2d

228711

batch of vinyl ether, the activity of the catalyst
increases, and the rate of hydrogenation is short-
ened from 3 hrs to 20-30 min. For H-volumetric
analysis of vinyl butyl ether, the best catalyst is
Ni, and for vinyl isopropyl ether the best catalyst
is Pd/CaCO₃. Both catalysts are suitable for the
hydrogenation of vinyl ethyl ether. The emf at the
catalyst was measured during the course of the re-
action and a special jacketed vessel made of Mo
glass used.

228711

SOKOLSKY, D. V.

USSR/Chemistry - Catalysts

Mar 52

"Potentiometric Investigation of the Reaction of Hydrogenation in the Liquid Phase on a Skeleton Nickel Catalyst," D. V. Sokol'skiy, V. A. Druz', Kazakh State U, Alma-Ata

"Zhur Fiz Khim" Vol XXVI, No 3, pp 364-370

Proposes a new, potentiometric method of investigating powdered hydrogenation catalysts. Finds that this method enables detn of hydrogen concn on the surface of the catalyst in the course of the reaction and also indirectly of the deg of adsorption of the unsatd hydrocarbon. Hydrogenation of the triple and double bond proceeds at different values

213T31

of emf, so that transition from triple to double bond can be easily established by measuring the potential. Hydrogenation of sodium maleinate and sodium fumarate takes place at different values of emf.

213T31

SOKOL'SKIY, D. V.

USSR/Chemistry - Catalysts

Apr 52

"Potentiometric Investigation of Hydrogenation Reactions. Effect of Additives on the Activity of a Skeleton Nickel Catalyst," V. A. Druz', D. V. Sokol'skiy, Kazakh State U imeni S. M. Kirov, Alma-Ata

"Zhur Fiz Khim" Vol XXVI, No 4, pp 484-491

With the aid of the potentiometric method, investigated the effects of added Pt, Pd, and benzyl mercaptan on catalyst activity and emf in the hydrogenation of dimethylacetylene carbinol, sodium maleate, and sodium fumarate. The energy with

217722

which hydrogen is bound to the surface of the catalyst is greatest on Pt black, smallest on Pd black, and about the same on skeleton Ni as on Pd black. Addn of Pd to skeleton Ni increases the energy of H binding somewhat; furthermore, dissolved H begins to play a role in the reaction. Addn of Pt to skeleton Ni brings about a sharp increase of the energy of H binding and a noticeable reduction of the reaction rate. Depending on the limiting stage of the process, introduction of benzyl mercaptan either brings about poisoning or activation of the hydrogen or hydrocarbon.

217722

SOKOL'SKIY, D. V.

SOKOL'SKIY, D.V.,: NIKOLENKO L.N.

Diazonium Salts; Cuprous Acetylide

Interaction of Diazonium salts with cuprous acetylide. Dokl. AN SSSR 82 No. 6:923-925 F '52
Kazakhskiy Gosudarstvennyy Universitet im. S.M. Kirova rc . 21 Dec. 1951

SO: Monthly List of Russian Accessions, Library of Congress, July 52 1952, Uncl.

SOKOL'SKIY, D. V.

USSR/Chemistry - Catalysts, Acetylene 21 Apr 52
Derivatives

"Catalytic Hydrogenation Under Constant Pressure,"
D. V. Sokol'skiy, O. S. Popov

"Dok Ak Nauk SSSR" Vol LXXXIII, No 6, pp 873-875

The effect of const hydrogen pressures from 1 to 3 atm was investigated potentiometrically in the hydrogenation of methylethyl acetylenyl carbinol on skeleton nickel. The results are shown graphically and in tables.

22378

Sokol'skiy, D.V.
1953-54, D.V.

USSR .

✓ The catalytic reduction of nitrobenzene and its derivatives on a skeleton nickel catalyst. I. D. V. Sokol'skiy and V. P. Shimonina (Kazakh State Univ.). *Sbornik State po Obshchei Khim., Akad. Nauk S.S.S.R.* 2, 1180-94 (1953).—PhNO₂ (I) reduced on Ni at 5° in 50% EtOH goes directly to PhNH₂, but at 25 and 40° the rate of reduction decreases to a min. and then rises, owing to stepwise reduction through intermediate compds. PhNO (II) is not reduced in the presence of I, though PhNH₂ is. Thus the stepwise reduction is due to intermediate formation of II. In the presence of 0.1N NaOH, stepwise reduction occurs at 5, 25, and 40°. These facts indicate that, when enough H is adsorbed on Ni, no intermediates are formed. Increasing temp. reduces the amt. of H adsorbed, and alkali favors adsorption of I at the expense of H. Such H as is adsorbed in the presence of alkali is more firmly held, however, since at 50° in neutral soln., reduction does not occur, whereas in alk. soln. it goes slowly to completion. II. Kinetics of reduction of nitrobenzene on a nickel skeleton promoted by rhodium. V. P. Shimonina and D. V. Sokol'skiy. *Ibid.* 1195-1201.—Rh deposited on the surface of Ni greatly promotes reduction of PhNO₂. The effect is increased in the presence of alkali. Direct reduction to PhNH₂ in the presence of alkali is then possible, confirming that the limiting factor is the amt. of adsorbed H.

H. M. Leicester

SOKOL'SKIY, D. V. and SEMONIA, V. P.

Catalytic Reduction of Nitrobenzene and Some of its Derivatives on "Skeleton" Nickel Catalyst. II. Kinetics of Nitrobenzene Reduction on "Skeleton" Nickel with Rhodium Promoter, page 1195, Sbornik Statey po obshchey khimii (Collection of Papers on General Chemistry), Vol II, Moscow-Leningrad, 1953, pages 1680-1686.

Kazakh State U

SHCHEGLOV, N.I.; SOKOL'SKIY, D.V.

Hydrogenation of 2-methyl-4methoxy-2,3-butene. Izv.AN Kazakh.
SSR Ser.khim. no.5:39-44 '53. (MLRA 9:5)
(Hydrogenation) (Butene)

SOKOL'SKII, D. V.

Chemical Abst.
Vol. 48 No. 5
Mar. 10, 1954
Apparatus, Plant Equipment, and Unit
Operations

(2)
Methods of production of hydrogen in generators of balloon type. D. V. Sokol'skii and B. V. Suvorov. *Vestnik Akad. Nauk Kazakh. S.S.R.* 10, No. 7 (Whole No. 100), 68-75(1953).—The generation of H_2 in alkali-Si type generator is described. The equation appears to be $Si + 2H_2O \rightarrow SiO_2 + 2H_2$. The recommended charge is $FeSi:NaOH:H_2O$ ratio of 1:0.75:4, which makes the method more economical and facilitates cleaning the app. G. M. K.

✓ Effect of structure of unsaturated organic compounds on the rate of their catalytic hydrogenation. D. V. Sokol'skiĭ. *Vestnik Akad. Nauk Kazakh. S.S.R.* 10, No. 10 (Whole No. 103), 99-106(1963).—Review and summary of the work of Yu. S. Zal'kind on hydrogenation of unsatd. compounds. 28 references. G. M. Kosolapoff

SOKOL'SKIY, D. V.

USSR/Scientists - Chemistry

Card : 1/1 Pub. 123 - 3/19

Authors : Kedrov, B. M., Dr. of Philosophy

Title : About the previously unknown predictions of D. I. Mendeleyev

Periodical : Vest. AN Kaz. SSR 12, 14 - 23, December 1953

Abstract : Selected excerpts from D. I. Mendeleyev's manuscripts in which he predicted the existence of eighteen new elements (unknown at that time) and the variability of elements. The names of the elements and their atomic numbers, are listed.

Institution : Acad. of Sc. Kaz. SSR

Submitted : D. V. Sokol'skiy, Act. memb. of Acad. of Sc. Kaz. SSR

SOKOL'SKIY, D. V.

USSR/Miscellaneous - Materials

Card : 1/1 Pub. 123 - 14/19

Authors : Konstantinov, V. V., Cand. of techn. sc.

Title : The role of hydration, crystallization and desiccation processes during solidification of structural gypsum

Periodical : Vest. AN Kaz. SSR 12, 90 - 95, December 1953

Abstract : The positive and negative effects of hydration, crystallization and desiccation on the hardening and mechanical strength of structural gypsum, are described. Five USSR references (1943-1951). Tables, graph, drawing.

Institution : ...

Presented by : D. V. Sokol'skiy, act. memb. of Acad. of Sc. Kaz. SSR

SOKOL'SKII', D. V.

Fats, fatty acids,
waxes and detergents

②
✓ Low-temperature hydrogenation of fats in solvents over the skeletal type of nickel catalyst. D. V. Sokol'skii and L. S. Melekhina. *Doklady Akad. Nauk S.S.S.R.* 89, 881-3 (1953).—Cottonseed and linseed oil were hydrogenated with Raney Ni catalyst and in benzene, toluene, and xylene. At 10-80° the rate of hydrogenation in solvents is greater than that without solvents at the same temps., the soln. in toluene being most reactive, that in xylene least. In benzene the rate rises with temp. to 30° after which it begins to decline. In toluene the rate rises with temp. up to 70°, after which it declines, the decline being possibly caused by H deficiency on the catalyst surface. At elevated temps. there is more deterioration of catalyst activity with use. The rate is proportional to the amt. of catalyst used. With larger amts. of catalyst and higher temp. the m.p. of the product after a given amt. of H uptake declines, indicating greater hydrogenation selectivity. The activation energy is about 9000 cal./mole in the 30-50° range. The most rapid hydrogenation occurs at a 1-2:1 ratio of oil to the solvent. G. M. Kosolapoff

SOKOLSKIY, D. V.

✓ Low-temperature hydrogenation of fats in solvents on a skeleton nickel catalyst. D. V. Sokolskii and L. S. Melekhina (*Dokl. Akad. Nauk, SSSR*, 1953, 80, 881—883).—Hydrogenation of linseed and cottonseed oil between 0 and 80° is investigated in the presence of a Ni catalyst. The rate of hydrogenation is increased by the presence of a solvent in the following order of effectiveness: xylene, benzene, toluene. The max. occurs with benzene at 30—40°, with toluene at 60—70°. The rate increases also with the concn. of catalyst and the increase is most pronounced at temp. at which the max. occur. The most favourable oil : solvent ratio is 1 : 1 to 1 : 2. Energy of activation at 30—50° is ~9000 cal./mol.

J.A.C. Abstr.

SOKOL'SKIY, D.V., deystvitel'nyy chlen; YERZHANOV, A.I.

Hydrogenation of conjugate double bonds of benzalacetone. Dokl. ~~AN~~ SSSR 93 no.
3:503-505 N '53. (MIRA 6:11)

1. Akademiya nauk Kazakhskoy SSR (for Sokol'skiy).
(Hydrogenation) (Acetone)

Sokol'skii, D. V.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

② Chem

Hydrogenation at constant pressure over platinum, palladium, and iridium. D. V. Sokol'skii and D. S. Popov. *Doklady Akad. Nauk S.S.S.R.* 93, 831 (1953).

Hydrogenation of MeEtC(OH)C:CH over Pt black at 0° gives an S-shaped rate curve; increase of H_2 pressure from 2 atm. to 3 atm. raises the rate 1.5-fold. Rise in temp. to 40° accelerates the reaction. At 2 atm. the 1st part of the reaction follows a zero-order rate, but in later stages at 2 atm. there is seen a break in the curve that is not seen at higher pressures. The catalyst potential rises by 5-10 mv. when the pressure is raised from 2 to 3 atm. With large amts. of the catalyst it becomes evident that the double bond is hydrogenated at a higher rate. Hydrogenation of Me:C(OH)C:CH over Pd- CaCO_3 shows more rapid addn. of H_2 to the triple bond than to the double bond, a definite break in the curve being observed; the catalyst potential at 1st drops by 200 mv., then rises; it reaches the satn. value at the end of the reaction. Rises in temp. and pressure accelerate the rate of hydrogenation markedly. Similar hydrogenation over Ir-C shows a 1st-order reaction course; increased pressure accelerates the reaction but slightly; the catalyst potential remains high and relatively const.

G. M. Kosolapoff

СОКОЛОВИЧ, Д. В.

USSR/Chemistry - Catalysts, Hydrogenation Sep 53

"Catalytic Hydrogenation in the Presence of Platinum Deposited on Activated Carbon," D.V. Sokol'skiy, T. Bakardzhiyeva

Iz Ak Nauk KazSSR, No 118, Ser Khim, Issue 6, pp 107-118

With increased filling of the surface of C with Pt, the activity of the catalyst increases up to a certain limit, then remains const, and finally drops. In the hydrogenation of cyclohexene or vinyl phenyl ether, the rate of the reaction is directly proportional to the quantity of Pt within

268T8

a wide range. The most active catalyst contains 4-5% of Pt by wt. In the hydrogenation of cinnamic acid, the reaction product inhibits the catalyst. The activity of the catalyst is not affected materially by the method of deposition of Pt.

268T8

SOKOL'SKIY, D.V.

✓ Hydrogenation of 2-methyl-3-butyn-2-ol. D. V. Sokol'skiy. *Izvest. Akad. Nauk Kazakh. S.S.R.* No. 120, Ser. Khim. No. 5, 22-33(1953)(in Russian); cf. *ibid.* 2, 84(1948).—The catalyst (Raney Ni, Pt black, Ni on silica gel, Pt on BaSO₄, or Pd on BaSO₄) in alc. at 0° and 25° was stirred 20 min. in an atm. of H₂, and then HC≡CC(Me)₂OH (I) was added and hydrogenated under continuous agitation. With Ni the reaction is zero order at both temps. until 60% of the equiv. amt. of H₂ is consumed. Addn. of an alc. soln. of H₂PtCl₆ to the above mixt. after the I has little effect on the rate of hydrogenation. H₂PtCl₆ or Pt black does not promote the hydrogenation of alkynes as it does that of alkenes. Dissolved as well as adsorbed H₂ takes part in the reaction. The adsorption of I on the surface of a catalyst displaces the H₂. The activation energy of hydrogenation depends on the stage of the reaction and the concn. of the reacting substances on the surfaces.
M. A.

SOKOL'SKIY, D.V.

3

Chem

Hydrogenation of 3-methyl-1-hexen-3-ol. N. I. Shecheglov and D. V. Sokol'skiy. *Izvest. Akad. Nauk Kazakh. S.S.R. No. 120, Ser. Khim. No. 6, 34-8(1963)*.—H. was passed through a solu. of $\text{CH}_3\text{CHC}(\text{Me})(\text{C}_2\text{H}_5)\text{OH}$ in 20 ml. alc. contg. 0.56 g. Raney Ni catalyst plus H_2PtCl_6 as promoter, in an app. described previously, (*ibid.* 2, 76 (1948)), at 0° and 25°. The hydrogenation is a zero-order reaction at 0°, but is a first-order reaction at 25°. At 25° the reaction rate is directly proportional to the Pt added (0.001–0.005 g.); at 0° the rate is almost independent of the Pt concn. The activation energy of the reaction varies with amt. of Pt on the surface of the Ni; for pure Ni, it is 7000 ± 1000 cal./mole; for 0.0049 g. Pt on 0.56 g. Ni, $11,000 \pm 1000$ cal./mole. Malcolm Anderson

2

PM

25

SOKOL'SKIY, D. V.

Chemical Abstracts
May 25, 1954
Dyes and Textile Chemistry

(3)
Hydrogenation of linseed oil on nickel catalyst on silica gel promoted by platinum and palladium. A. V. Bukhman and D. V. Sokol'skiy. *Izvest. Akad. Nauk Kazakh. S.S.R.* No. 123, Ser. Khim. No. 7, 9-19 (1953); cf. following abstr.—Successful and rapid hydrogenation of linseed oil is possible in EtOH with Ni catalyst promoted with Pt and Pd. The apparent activation energy for such catalysts is about 6000 cal./mole, that for unpromoted catalyst 12,000 cal./mole. The promoting effect of Pd exceeds that of Pt, but its effect disappears completely at temp. of 120° or higher. With Pt promoter successful hydrogenations are readily run at 40°. Solvents like EtOH, toluene, or glycerol can be used to reduce the viscosity of the original oil. G. M. Kosolapoff

SOKOL'SKIY, D. V.

Chemical Abstracts

May 25, 1954

Dyes and Textile Chemistry

(3)
Low-temperature hydrogenation of vegetable oils in solvents. D. V. Sokol'skii and L. S. Melekhina. *Izvest. Akad. Nauk Kazakh. S.S.R. No. 123, Ser. Khim. No. 7, 20-9(1953)*.—Hydrogenation of linseed and cottonseed oils at 30-60° with Raney Ni catalyst is more rapid in nonpolar or weakly polar solvents (benzene or toluene) than without solvent. In benzene the optimum temp. is 30°; in toluene it is 60-70°. G. M. Kosolapoff

11-11-54
my

SOKOL'SKIY, S. V.

Chemical Abstracts
May 25, 1954
Dyes and Textile Chemistry

(3)
Hydrogenation of cottonseed oil in the presence of Raney nickel catalyst promoted by platinum and palladium. N. I. Shcheglov and D. V. Sokol'skiy. *Izvest. Akad. Nauk Kazakh. S.S.R. No. 123, Ser. Khim. No. 7, 30-8(1953)*; cf. preceding abstr.—With unpromoted Raney-type Ni catalyst the cottonseed oil is hydrogenated best at 60-80°. Higher temp. lowers the apparent activation energy: at 25-40° it is 10,000-11,000 cal./mole; at 80-100° it is 2000-3000 cal./mole. On promotion with Pt the reaction rate rises with the amount of promoter up to 0.009 g. per 0.50 g. Ni; such promotion raises the temp. optimum to 80-100°. Ni promoted with Pd is somewhat more active than that with Pt, and promotion with Pd lowers the optimum temp. to 40-60°. Addn. of Pt increases the strength of bonding of H to the catalyst surface, while Pd has an opposite effect.
G. M. Kosolapoff...

Chemical Abstracts
May 25, 1954
Petroleum

Lepsinsk bentonite clay as a catalyst for cracking reaction. D. V. Sokol'skiĭ, L. A. Buvalkina, and N. B. Noskova. *Izvest. Akad. Nauk Kazakh. S.S.R. No. 123, Ser. Khim. No. 7, 39-43(1953)*.—The Lepsinsk bentonite clay, activated by 20% cold HCl 4 days and washed and dried 9 hrs. at 50° and 5 hrs. at 150°, is an active cracking catalyst for treatment of petroleum, yielding lower hydrocarbons which boil from 30° up. The utilization of pressure or addn. of 1% V_2O_5 to the clay is not necessary for cracking activity. The best cracking conditions are: 450°, space velocity 0.6, regeneration time 4 hrs.; pressure-treated clay utilizes greater space velocities (0.88); V_2O_5 -treated clay has the same optimum operating conditions as untreated clay. However, the use of pressure and addn. of V_2O_5 reduce the time of burn-out of coke by 2 hrs. In all cases after 3-4 expts. the yield of gasoline declined to about 17-18% and then remained const. G. M. Kosolapov

9-24-54
JJP

KUNAYEV, D.A.; SOKOL'SKIY, D.V.

Resolution of the Presidium of the Academy of Sciences of the Kazakh S.S.R. concerning the 200th anniversary of the reunification of the Ukraine with Russia. Vest.AN Kazakh. SSSR 11 no.1:22-24 Ja '54.
(MLRA 7:2)

1. Prezident Akademii nauk Kazakhskoy SSR (for Kunayev).
2. Glavnyy uchenyy sekretar' Prezidiuma Akademii nauk Kazakhskoy SSR, deystvitel'nyy chlen Akademii nauk Kazakhskoy SSR (for Sokol'skiy).
(Academy of Sciences of the Kazakh S.S.R.)

SOKOL'SKIY, D. V.

USSR/Chemistry - Hydrogenation

Card 1/1 : Pub. 123 - 11/17

Authors : Sokol'skiy, D. V.; and Levchenko, L.

Title : Hydrogenation of unsaturated compounds

Periodical : Vest. AN Kaz. SSR 11/1, 92-105, Jan 1954

Abstract : Description is given of experimentation with the hydrogenation of a mixture of dimethylacetylenylcarbinol and propiolic acid in the presence of nickel and palladium as catalysts on CaCO_3 , after previous hydrogenation of the separate components of the mixture. Detailed data are presented that were compiled from the experiments. Graphs; Tables.

Institution : ...

Submitted : ...

SOKOL'SKIY, D.V.

USSR 4

✓ Kinetics and mechanism of catalytic hydrogenation. D.
V. Sokol'skiy. *Vestnik Akad. Nauk Kazakh. S.S.R.* 11,
No. 8, (Whole No. 113), 60-69(1984).—The kinetics and
mechanism of catalytic hydrogenation as studied by follow-
ing the potential of the catalyst are reviewed. The curves
of potential exactly parallel the degree of hydrogenation up
to the instant of complete removal of adsorbed H. In case
of Ni catalyst with C_4H_8 substrate the amt. of dissolved H
in 0.1N NaOH, H_2O , or 98% EtOH remains const. In all
cases, but in basic soln. the hydrocarbon removes the great-
est amt. of adsorbed H, in comparison with H_2O or EtOH
media. Numerous examples of hydrogenation are discussed
(cf. *C.A.* 47, 4715f). 10 references. G. M. Kosolapoff

SOKOL'SKIY, D.V.

AROMATIZATION OF FRACTIONS OF KAZAKHSTAN PETROLEUM ON OXIDE CATALYSTS. I. Buvalkina, L.A., Sokol'skii, D.V. and Volkova, L.I. (Uchen. Zap. Kazakh. Univ. (Sci. Mem. Kazakh. Univ.), 1954, vol. 16, 50-57; F. U. abstr. in Ref. Zh. Khim. (Ref. J. Chem., Moscow), 1955, (19), 44112). The aromatization of wide fractions of Kazakhstan crude over mixed oxide catalysts was studied. Of three catalysts used (chromia (I), chromia/alumina with additions of cerium and potassium oxides (II), and vanadium oxide/alumina (III), the most active in the aromatization of the 145-215° and 110-230° fractions was II. In the aromatization of the 145-215° fraction over I at 470°, if the space velocity was decreased from 0.739 to 0.159 l./l. of catalyst per hour, the quantity of aromatic hydrocarbons in the catalysate increases from 20 to 43%. In the aromatization of the 110-230° fraction over II, if the space velocity is increased from 0.106 to 0.353 l./l.h. the yield of products which are sulphonated at 530° rises to 54.2%. The productivity of the catalyst is then 153 g/l. of catalyst h. In aromatization of the same fraction over III, decreasing the space velocity from 0.6 to 0.8 l./l.h. causes an increase in the yield of products which are sulphonated to 49%.

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SOKOL'SKIY, D. V.
USSR/Chemistry

Card 1/1

Authors : Buvalkina, L. A.; and Sokol'skiy, D. V.

Title : Kinetics of hydrogenation of benzyl cinnamate over a skeleton nickel catalyst

Periodical : Zhur. Ob. Khim. 24, Ed. 5, 833 - 839, May 1954

Abstract : The hydrogenation of benzyl cinnamate at room temperature over a skeleton nickel catalyst results in the discontinuation of the O-C bond and the reaction products in this case are toluene and hydrocinnamic acid. The rate of hydrogenation of the benzyl ether, up to the point of absorption of 56% of the hydrogen, is relatively high and followed by the hydrogenation of the - CH = CH - bond; hydrogenolysis occurs at lower rates. The apparent hydrogenolysis energy at temperatures of 25 - 40° is 13950 cal/mol. At high temperatures (from 25 - 500) the thermal coefficient of hydrogenation is small and the apparent activation energy drops to zero. Five USSR references. Tables, Graphs.

Institution : The S. M. Kirov State University, Alma-Ata, Kaz-SSR

Submitted : November 28, 1953

SOKOL'SKIY, D.V.

BAYKONUROV, O.A.; BELYAYEV, A.I.; BOGOMOLOV, V.I.; VANYUKOV, V.A.; GAZARYAN, L.M.;
GLEK, T.P.; GORYAYEV, M.I.; KARCHEVSKIY, V.A.; KLUSHIN, D.N.; KUNAYEV,
D.A.; LEBEDEV, B.N.; LISOVSKIY, D.I.; LOSKUTOV, F.M.; MITROFANOV, S.I.;
MOLCHANOV, A.A.; MOSKVITIN, I.N.; OL'KHOV, N.P.; OSIPOVA, T.B.;
PLAKSIN, I.N.; PONOMAREV, V.D.; RUMYANTSEV, M.V.; SOKOL'SKIY, D.V.;
SOKOLOV, M.A.; SPASSKIY, A.G.; STRIGIN, I.A.; SUSHKOV, K.V.;
SHAKHNAZAROV, A.K.; YASYUKOVICH, S.M.

Khosrov Kurginovich Avetisian, obituary. TSvet.net.27 no.3:66-68
My-Je '54. (MIRA 10:10)

(Avetisian, Khosrov Kurginovich, 1900-1954)

SOKOL'SKIY, D. V.

USSR/ Chemistry . Hydrogenation

Card : 1/1

Authors : Buvalkina, L. A., and Sokol'skiy, D. V.

Title : Kinetics of hydrogenation of cinnamic alcohol over skeleton nickel

Periodical : Zhur. fiz. khim. 28, Ed. 6, 961 - 969, June 1954

Abstract : The kinetics of hydrogenation of cinnamic alcohol over a skeleton Ni-catalyst was investigated at temperatures of 0.25 and 40°C, and the zero-order of reaction was established at the point where the theoretically required amount of H is completely absorbed. Other factors affecting the rate of hydrogenation, are listed. Progressive addition of Pt to the Ni catalyst changes the reaction order from zero to one. The order of hydrogenation reaction during sufficiently large Pt concentrations, is explained. Ten references: 8 USSR, 1 USA and 1 French. Tables; graphs.

Institution : The S. M. Kirov Kazakh State University, Alma-Ata

Submitted : April 16, 1951

SOKOL'SKIY, D.V.

U S S R .

Change in adsorption catalysts with time. D. V. Sokol'skiy and E. I. Gil'debrand (S. M. Kirov Kazakh State Univ.). *Doklady Akad. Nauk S.S.S.R.* 94, 83-5 (1954).

The change in the sp. activities of Pd and Pt catalysts was studied for the catalytic hydrogenation of dimethylethynylcarbinol (the triple bond) and of picric acid (the nitro group), which are adsorbed in different concns. on activated C, with respect to the storage time. The first series of expts. was made soon after the prepn. of the catalyst (after 2 months for Pd and 3 days for Pt). A 2nd series of expts. was made after the catalysts had been stored (1.5 yrs. for Pd and 1 yr. for Pt). For fresh catalysts, the reproduction of exptl. data was difficult, but the catalyst, upon storage, attained a more stable state and the reproducibility was good. The activity of the catalyst increased with an increase in the degree of filling. The effect of storage is mainly a significant lowering of the minima on the curves of activity vs. degree of filling. J. Rovtar Leach

SOKOLSKIY, D.V.

✓ Reactivity of hydrogen sorbed by Raney nickel catalyst. D. V. Sokolskii and S. T. Bezverkhova (*Dokl. Akad. Nauk SSSR*, 1954, 94, 493—496).—Kinetics of hydrogenation of some unsaturated hydrocarbons (C_6H_6 , *o*-nitrophenol and dimethyl-ethynylcarbinol) by H_2 sorbed by Raney Ni catalyst suspended in 0.1 N-NaOH, water and 96% EtOH is studied at 20—60° in order to establish the influence of medium on the relation between the amounts of adsorbed and dissolved H_2 . The course of hydrogenation is followed by measuring the change of potential of the Ni catalyst with time. The reactivity of H_2 increases linearly with temp. and is highest in aq. NaOH and lowest in EtOH. The amount of H_2 dissolved in Ni is independent of the medium but the ratio of adsorbed to the dissolved H_2 is 5 : 1 for 0.1 N-NaOH, 3 : 1 for water, and 2 : 1 for 96% EtOH. The sp. surface of the catalyst calculated on the basis of H_2 adsorption is 320 m.²/g. S. K. LACHOWICZ.

SOKOL'SKIY, D.V., redakter; GLAZYRINA, D.M., redakter; ROROKINA, Z.P.,
tekhnicheskii redakter.

[Catalytical hydrogenation and oxidation] Kataliticheskoe gidriro-
vanie i okislenie. Alma-Ata, Izd-vo Akademii nauk Kazakhskoi SSR,
1955. 295 p. (MLRA 9:4)

1. Deystvitel'nyy chlen AN Kazakhskoy SSR (for Sokol'skiy).
2. Konferentsiya po kataliticheskemu gidrirovaniyu i okisleniyu.
(Hydrogenation) (Oxidation)

SOKOL'SKIY, D. V.

Effect of solvent on the rate of hydrogenation. D. V. Sokol'skiy. *Kataliticheskoe Gidirovanie i Okslenie, Akad. Chem*

Nauk Kazakh: S.S.R., Trudy Konf. 1955, 5-17.—The data on hydrogenation of several substances indicate that for materials that are strongly adsorbed on the catalyst and that desorb H_2 from much of its surface, the effect of a solvent applies only to an alteration of the degree of coverage of the active surface by unsatd. substances; increased soly. in the solvent accelerates the rate of hydrogenation. Substances weakly adsorbed on the catalyst are affected by the solvent insofar as the alteration takes place in the energy of bonding of H_2 with the surface. Kinetic curves are given for hydrogenations of $(HC:CHMe)_2$ on Ni in 50% EtOH with NaOH added; the same over Pd/CaCO₃; dimethylethynylcarbinol over Ni at pH 7 and 11 and in acid medium and in dioxane- H_2O ; methylpropylvinylcarbinol over Ni in dioxane- H_2O . Hydrogenation of the unsatd. carbinols declines with increasing pH, along with which the catalyst potential rises during the reaction; the potential drops in comparison with the reversible H electrode; borax buffers give the same results. The catalyst potential rises with decrease of concn. of substrate and returns to that of reversible H electrode at the end of the reaction.

G. M. K.

M. A. YOUTZ

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SOKOL'SKIY, D.V.

Effect of certain addends on the kinetics of hydrogenation of C:CC:O bonds. A. I. Erzhayov and D. V. Sokol'skiy. *Kataliticheskie Gidrirovaniya i Oksidatsii, Akad. Nauk, Kazakh S.S.R., Trudy Konf.* 1955, 70-8. Hydrogenations over Raney Ni of unsatd. carbonyl compds. were examd. Hydrogenation of benzalacetone in 60% EtOH is retarded at 0° by addn. of KCN, but at 40-60° addn. of KCN causes the reaction to accelerate, the max. effect being at 40°. The results indicate that KCN strengthens the bond of H with the catalyst surface in the stage of hydrogenation of the C:C bond. The hydrogenation rate of the CO group is unaffected by KCN at low temp. but at higher temp. the kinetic curves show max. caused by the action of KCN on the catalytically active centers and by the basic nature of KCN. In basic soln. KCN severely hinders the rate of hydrogenation by acting as a catalyst poison. Addn. of Et₃NPh increases the rate of hydrogenation of benzalacetone at about 0.00934 g./ml. concn.; higher concns. act as inhibitors of hydrogenation; a similar effect occurs in basic medium. With cinnamaldehyde hydrogenation the addn. of small amts. of Et₃NPh retards the reaction at the C:C bond, followed by increased rate at higher concn., with max. about 0.1 g./ml.; in basic medium the amine retards the reaction at C:C bond and affects the C:O reaction but slightly. CS(NH₂)₂ retards hydrogenation of cinnamaldehyde at the C:C bond and somewhat accelerates the reaction at C:O bond; in basic medium CS(NH₂)₂ greatly reduces the rate of reaction at C:C bond and accelerates it at the C:O bond. The results are explained by variation of the strength of linking of H to the catalyst as affected by the addends.

G. M. Kosolapoff

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M. R. YOUTZ
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SOKOL'SKIY, D. V.

Mechanism of catalytic reduction of aromatic nitro compounds. V. P. Shimonina and D. V. Sokol'skiy (Kazakh State Univ., Alina-Ata). *Kazakhstanskaya Gosudarstvennaya Akad. Nauk Kazakh. S.S.R., Trudy Konf.* 1955, 100-20. Hydrogenation of PhNO_2 was examd. over Ni catalyst, promoted by Rh or Pd, and over Pt catalyst. The reactions were run in 50% EtOH with and without addn. of NaOH. The mechanism varies with the conditions used. If the proportion of active H is relatively high, the reaction is nonselective and the intermediates are attacked before desorption; in such case PhNH_2 is the final and only product. This occurs over Raney Ni at 5° with or without promoter; the same occurs with promoted Ni or Pt at all temps. With deficiency of active H on the surface the accumulation of PhNO is demonstrated best in alk. medium at all temps. and in neutral soln. at 25-40°. The reaction rate is retarded by substituents in this order: PhNO_2 , $p\text{-O}_2\text{NC}_6\text{H}_4\text{NH}_2$, $p\text{-O}_2\text{NC}_6\text{H}_4\text{OH}$, $p\text{-O}_2\text{NC}_6\text{H}_4\text{CO}_2\text{H}$. At 40° on Raney Ni in neutral soln. the substituents that limit H activation actually accelerate the reaction and the ascending order is: PhNO_2 , $p\text{-O}_2\text{NC}_6\text{H}_4\text{CO}_2\text{H}$, $p\text{-O}_2\text{NC}_6\text{H}_4\text{NH}_2$, $p\text{-O}_2\text{NC}_6\text{H}_4\text{OH}$. On Ni the rate of hydrogenation rises from PhNO_2 to $m\text{-O}_2\text{NC}_6\text{H}_4\text{NH}_2$, p -isomer and o -isomer; over Pt the order is reversed. G. M. K.

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SOKOL'SKIY, D.V.

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Electrochemical methods of study of catalysts. S. R. Omarova and D. V. Sokol'skiy (Kazakh State Univ., Alma-Ata). *Kataliticheskoe Gidrirovaniye i Oksleniye, Akad. Nauk Kazakh. S.S.R., Trudy Konf.* 1955, 135-43.—The potentiometric (C.A. 44, 10487c) and the electrochem. methods (Franklin and Shlygin, C.A. 28, 4007; 31, 5247) gave identical results when applied to a 1:10 Pt-Pd alloy. If the catalyst is in a compact dense form, the diffusion factor is important but in the powd. form of the catalyst in a shaking machine the reaction takes place through the utilization of adsorbed H and the diffusion factor is unimportant. Hydrogenation of C:C bond with the catalyst is a 1st-order reaction, whereas the acetylenic bond is attacked by a reaction having a mixed order. The Pt-Pd catalyst shows a mechanism of action close to that displayed by Raney Ni. The catalyst is very active and stable in EtOH-acid medium and unstable in basic medium.

G. M. Kosolapoff

DM

SOKOL'SKIY, D.V.

Low-temperature hydrogenation of cottonseed oil on nickel-chrome catalyst. D. V. Sokol'skiĭ and E. G. Bolkhovitiina (Kazakh State Univ., Alma-Ata). *Kata-liticheskoĕ Gidrirovaniĕ i Oksleniĕ, Akad. Nauk Kazakh. S.S.R., Trudy Konf.* 1955, 193-203. — Ni-Cr catalysts with or without a support can be used for hydrogenation of cottonseed oil at 120-60°; this is 70-100° below the usual practice for Ni-Cu catalyst used in the U.S.S.R. This catalyst without carrier support can be used 10-15 times. The rate of reaction improves with stirring. The catalyst can be stored up to 1.5 months. For regeneration a temp. of 350° is necessary.
G. M. Kosolapoff

SOKOL'SKIY, D.V.

Effect of increased pressure of hydrogen on the rate of catalytic hydrogenation in solutions. O. S. Popov and D. V. Sokol'skiy (Kazakh State Univ., Alma-Ata), *Kataliticheskie Gidirovaniye i Oksleniye, Akad. Nauk Kazakh. S.S.S.R., Trudy Konf.* 1955, 273-91. — Kinetic curves of hydrogenation are given for tetramethylbutynediol (I) over Ni in 0.1N NaOH and over Ni on SiO₂, benzalacetone (II) over Raney Ni in 40% aq. EtOH 0.1N in Na₂SO₄, and benzalacetone over Ni on SiO₂ in the same solvent. The above compds. are hydrogenated selectively. Hydrogenation of the acetylenic glycol on Ni occurs at higher anodic potential than that of the ethylenic analog (III); i.e. the former glycol displaces more H from the surface than does the ethylenic glycol. With Ni-SiO₂ the hydrogenation stops at the ethylenic glycol step and the bonding of H to this catalyst is stronger. Hydrogenation of benzalacetophenone also depends on selective adsorption as shown by catalyst potential max. after uptake of 1 mole H. With Ni-SiO₂ catalyst only the olefinic bond is hydrogenated in this compd., apparently owing to the absence of centers capable of activating the carbonyl group. Hydrogenation of the triple bond in the acetylenic glycol and of the ethylene bond in benzalacetone over Raney Ni or Ni-SiO₂ follows zero order or near zero order reaction; in hydrogenation of the ethylenic glycol, the reaction is close to 1st order at 0° and approaches 0.5 order as the temp. is raised to 60°.

Popov, O.S., Sokol'skii, D.V.

Benzalacetone hydrogenation at the carbonyl group on Raney Ni approaches 1st order reaction. The above values of reaction order apply to the substrate. As to the order with respect to H₂, the reaction is of first order with the Raney Ni or Ni-SiO₂ for either the acetylenic or ethylenic glycols; for benzalacetonephenone the order of the reaction with respect to H₂ is fractional but close to 1st order. The runs at 0-60° permitted the calcn. of activation energies (for each catalyst the activation energies are given resp. for I, 2, and 3 atm. H pressure) for 0-20° interval: I, Raney Ni, 4500 cal./mole, 4200, 3800; I, Ni-SiO₂, 4700, 7000, 7400; III, Raney Ni, 5500, —, 8800; II double bond, Raney Ni, 6800, 6700, 7000; II double bond, Ni-SiO₂, 7000, 8800, 8300; II carbonyl, Raney Ni, 6000, 6800, 6400. For 20-40° interval: I, Raney Ni, 2900, 2200, 3500; I, Ni-SiO₂, 6700, 7100, 5400; III, Raney Ni, 8400, 7900, 6600; II, double bond, Raney Ni, 5500, 6100, 6200; II double bond, Ni-SiO₂, 10,100, 8500, 9300; II carbonyl, Raney Ni, 4800, 5000, 5100. For 40-60° interval: I, Raney Ni, 0, 2600, 2200; I, Ni-SiO₂, 6300, 6700, —; III, Raney Ni, 2100, 4000, 4500; II double bond, Raney Ni, 2200, 4700, 4100; II double bond, Ni-SiO₂, 5000, 6900, 6800; II carbonyl, Raney Ni, neg. values. Since the mechanism of the reactions is detd. by selective adsorption and activation, the conditions of pressure, temp. and concn. may be selected to promote a desired reaction course.

G. M. Kosolapoff

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SOKOL'SKIY, D. V.

✓ Kinetics of catalytic hydrogenation in the liquid phase.
D. V. Sokol'skiy. *Voprosy Khim. Kinetiki, Kataliza i Reaktsionnoi Spособnosti, Akad. Nauk S.S.S.R.* 1955, 588-607.—The hydrogenation ability of a catalyst is composed of 2 factors, the catalyst's lattice const., and the filling of the *d* shell. The dissolved H in a compact catalyst is an important factor in industrial hydrogenation, and a group of elements of low at. wt., contg. large amts. of dissolved H in the cryst. state, Pd, Rh, Ni, Co, must be specifically mentioned. H is practically irreversibly adsorbed on typical hydrogenation catalysts (Pt, Pd, Ni) in addn. to a slight reversible chemisorption. Both kinds can participate in hydrogenation, but the participation by the strongly adsorbed H depends on the temp., the bond to be hydrogenated, previous activation, and the surface satn. with H. The strongly adsorbed H seldom hydrogenates the double bond of olefins at low temp. The medium has an important effect during the hydrogenation with weakly adsorbed H.

W. M. Sternberg

SOKOL'SKIY, D. V.

USSR/ Chemistry - Catalytic hydrogenation

Card 1/1 Pub. 123 - 8/11

Authors : Sokol'skiy, D. V., and Erzhanova, M. S.

Title : The nature of the solvent and its effect on the rate of hydrogenation

Periodical : Vest. AN Kaz. SSR 2, 75 - 79, Feb 1955

Abstract : An investigation was conducted to determine the effect of the pH of a medium on the rate of hydrogenation of cyclohexene, hexine and hexene over Pt-Pd catalysts in a 96%-ethyl alcohol solution. The results obtained are presented in graphs. Ten references: 9 USSR and 1 Italian (1908 - 1954). Graphs.

Institution:

Submitted:

SOKOL'SKIY, D.V.; FASMAN, A.B.

Effect of the amount of skeleton nickel catalyst on the speed
of hydrogenation of certain unsaturated alcohols. Vest. AN Kazakh
SSR 11 no.9:70-77 S '55. (MIRA 9:1)
(Hydrogenation) (Catalysts, Nickel) (Alcohols)

SOKOL'SKIY D.V.

✓ *Change of Palladium-on-Carbon Catalysts with Time.
D. V. Sokol'sky and E. I. Gil'debrand (*Zhur. Fiz. Khim.*,
1955, 29, (5), 760-765).—[In Russian]. To explain the theory
of "active centres" in catalysis the degree of coverage of
the carrier by the catalytic phase was studied from the angle
of the firmness of anchorage of atoms of the catalyst on the
surface of the carrier. Changes of activity of the catalyst
with time of storage after prepn. were first studied. The sp.
catalytic activity of Pd on C in given ranges of coverage
(0.001-0.007 of the molecular layer) passes through two
max. and two min. The active phase on the surface of an
adsorbed Pd catalyst changes with time. These changes
are expressed by variations of the sp. activity with the degree
of coverage of the C carrier by the active phase. With
lapse of time the sp. activity of the catalyst richer in Pd
increases abs. (referred to a freshly prepared catalyst) and
relatively (referred to the activity of a catalyst poorer in Pd).
11 ref.—A. W.

✓ *Change of Platinum-on-Carbon Catalysts with Time.
D. V. Sokol'sky and E. I. Gil'debrand (*Zhur. Fiz. Khim.*,
1955, 29, (5), 766-771).—[In Russian]. Cf. *ibid.*, p. 760;
preceding abstract. Pt on C is used for the catalytic hydro-
genation of dimethyl acetylenecarbinol and picric acid.
20 concentrations of Pt were studied immediately after ad-
sorption on C and one year later. The sp. activity of the
catalyst depends on the extent of coverage of C carrier by
Pt in both reactions studied. Two max. were found. The
range of concentrations studied was 0.001-0.008 of the
molecular layer. The sp. activity of the catalyst increased
with concentration of Pt, and reached its first max. at con-

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Sokol'sky, D. V., Gil'debrand, E. I.,

centration $\alpha = 2.75 \times 10^{-4}$. Fresh catalysts were found to be very unstable, causing poor reproducibility of the results, but after one year's storage the stability improved, probably because the atoms of the catalyst re-arranged themselves in such a way that catalysts richest in Pt display the greatest sp. activity. For this reason the second max. moved in the direction of higher concentrations of Pt.—A. W.

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SOKOL'SKIY, D. V.

Chem Changes of the platinum-on-carbon catalysts with time.
D. V. Sokol'skiy and L. I. Gil'debrana (S. M. Kirov
Kazakh State Univ., Alma-Ata). *Zhur. Fiz. Khim.* 29,
760-71 (1955); cf. preceding abstr. — Dimethylacetylenyl-
carbinol and picric acid were hydrogenated with Pt-carbon
catalysts (20 different Pt contents) freshly prep'd. and after 1
yr. storage. The relation between the carrier surface satu-
ration of the acetylene triple bond and the NO_2 in picric acid,
passed through a max. in both cases. Catalysts with
the lowest Pt content had lowest specific activity. The
activity of the freshly prep'd. and aged catalysts increased
sharply with the Pt content, and reached its first max. at $\alpha =$
 2.75×10^{-2} . "Fresh" Pt-carbon catalysts, obtained
under mild conditions were very unstable, and the hydro-
genation results were not reproducible. After a year's stor-
age they became more stable, and the results were better
reproducible. The Pt atoms on the carbon surface re-
grouped themselves during long storage in such a way that
the greatest specific activity was found in the catalysts of
highest Pt content. As a result, a 2nd activity max. in
the higher-Pt-content range appeared and exceeded the 1st
max. in abs. value.

W. M. Sternberg

LFH DM

S-SOKOLSKIY D.V.

USSR/Chemistry - Organic chemistry

Card 1/1 Pub. 22 - 23/49

Authors : Krupennikova, K. A., and Sokol'skiy, D. V., Memb. Corr. Acad. of Sc.,
Kaz. SSR

Title : Catalytic cyclization of ortho-nitroethyl benzene

Periodical : Dok. AN SSSR 102/1, 93-95, May 1, 1955

Abstract : Experiments were conducted to determine the catalytic derivation of indole from direct cyclization of o-nitroethyl benzene which reduces one stage of the synthesis process. The results obtained during the reaction over an aluminum silicate catalyst (of petroleum cracking application) saturated with chromium anhydride and activated with KOH are listed. Maximum indole yield was obtained at a molecular ratio of o-nitroethyl benzene: hydrogen of 1 : 1. Seven references: 4 USSR and 3 USA (1936-1951). Tables.

Institution : The Kazakh State University im. S. M. Kirov

Submitted : November 14, 1954

Sokol'skiy, D. V.

USSR/Chemistry - Physical chemistry

Card 1/2 Pub. 22 - 33/54

Authors : Sokol'skiy, D. V., Act.Memb., Acad. of Sc., Kaz. SSR; and Omarova, S. R.

Title : ~~Electrochemical and catalytic properties of a Pt-Pd alloy (1:10)~~
Electrochemical and catalytic properties of a Pt-Pd alloy (1:10)

Periodical : Dok. AN SSSR 102/5, 977-979, Jun 11, 1955

Abstract : Experiments were conducted at various temperatures and different alkali-acid concentrations to determine the electrochemical and catalytic properties of Pt-Pd alloys. The alloy was obtained through combined electrochemical deposition in a PdCl_2 PtCl mixture. It was found that the hydrogenation of the double as well as triple bond in the Pt-Pd alloy takes place at a considerably high rate. The established greater catalytic activity of the alloy tested is explained by the increase in the number of

Institution : The S. M. Kirov State University, Kazakhstan

Submitted : January 18, 1955

Card 2/2 Pub. 22 - 33/54

Periodical : Dok. AN SSSR 102/5, 977-979, Jun 11, 1955

Abstract : activated-adsorbed hydrogen on the surface of the alloy. The property of such catalyst was found to be similar to the properties of a skeletal Ni. Four USSR references: (1934-1952). Table; graphs.

SOKOL'SKIY, D. V.

698

Chem Hydrogenation of tetramethylbutynediol on Raney nickel catalyst at elevated pressure. O. S. Popov and D. V. Sokol'skiy (S. M. Kirov State Kazakh Univ., Alma-Ata). Doklady Akad. Nauk S.S.S.R. 105, 731-4(1955). — Kinetic and potential curves were detd. for hydrogenation of tetramethylbutynediol over Raney Ni. At 20°, 40°, 60°, or 0° the curves invariably show a rate break after intake of 1 mole H; the rate declines and the catalyst potential declines. The product at this point is a cis-trans mixt. of the olefinic diols. The rate is zero order with respect to the amt. of substrate in the 1st half of the process, but the hydrogenation of the olefinic diols has a rate corresponding to 0.5 order; the order with respect to H is approx. 1st order; a rise in temp. accelerates the 1st half of the process more than the 2nd. The activation energy declines slightly with increase of H pressure to 3 atm. and with a rise in temp. G. M. Kosolapoff

PM

Sokol'skiy D.V.

USSR/Physical Chemistry - Electrochemistry

B-12

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3955

Author : Skopin Yu.A., Sokol'skiy D.V.

Inst : Academy of Sciences Kazakh SSR

Title : Electrochemical Measurement of the Surface of Metal Powder

Orig Pub : Vestn. AN KazSSR, 1956, No 6, 89-91

Abstract : Charging curves (CC) were recorded for Pt- and Pd-black in 0.1 N H_2SO_4 . It is shown that the CC thus obtained are fully similar to the charging curves obtained for smooth Pt and Pd electrodes. Actual surfaces of Pt- and Pd-black, calculated on the basis of the cathodic branch of CC, are of 260 and 280 m^2/g , respectively.

Card 1/1

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SOKOL'SKIY, D. V.

Med Hydrogenation of cottonseed oil with Raney nickel catalyst. D. V. Sokol'skiy and I. I. Voloshin. *Izvest. Akad. Nauk Kazakh. S.S.R., Ser. Khim.* 1956, No. 10, 63-8.— The hydrogenation curves of cottonseed oil with Raney Ni are shown. Hydrogenation is possible at 40-150°, optimum at 130-40°. With 0.15-0.25% catalyst hydrogenation takes 3-4 hrs. and the catalyst can be used up to 4 times. The catalyst is prepd. by caustic leaching the Al-Ni alloy at 120-30°. At 40-150° range of temp. of hydrogenation, the activation energy for the hydrogenation is 4000-5000 cal./mol.. At temps. over 160° the catalyst becomes inactive. J. M. Kosolapoff

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~~SOKOL'SKIY D.V.~~
~~SOKOL'SKIY D.V.~~

Regeneration of used aluminosilicate catalysts by chemical additions. D. V. Sokol'skiy and Sh. Battalova. Invest. Akad. Nauk. S.S.R., Ser. Khim. 1956, No. 10, 60-71. —Used aluminosilicate catalysts can be regenerated by satn. with aq. solns. of Al sulfate or $TiCl_4$. Treatment with salts of Cr, V, or W results in higher aromatizing action of the catalyst; Mo salts lower catalyst activity.

G. M. Kosolapoff

SKOPIN, Yu.A.; SOKOL'SKIY, D.V.

Electrochemical measurement of the surface of powdered metals.
Vest.AN Kazakh.SSR 12 no.6:89-91 Je '56. (MLRA 9:8)
(Powder metallurgy) (Electrochemical analysis)

SOKOL'SKIY, D. V.

4

The use of natural aluminosilicates from different
Kazakhstan areas as cracking catalysts. L. A. Buvalkina,
A. Kairgalliya, and D. V. Sokol'skiy - *Vestnik Akad.
Nauk Kazakh. S.S.R.* 12, No. 12, 18-23 (1968) (in Russian).

3

USSR/Kinetics - Combustion. Explosions. Topochemistry. Catalysis. B-9

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18638

Author : V.P. Shmonina, D.V. Sokol'skiy.

Title : Catalytic Reduction of Aromatic Nitrocompounds. VI.
Influence of Some Functional Groups on Kinetics of
Nitrogroup Reduction on Skeleton Nickel.

Orig Pub : Zh. obshch. khimii, 1956, 26, No 6, 1759-1765

Abstract : The reduction of nitrobenzene (I), nitrobenzoic acid (II), n-nitrophenol (III) and n-nitroaniline (IV) in aqueous-alcohol and alcohol-alkaline solutions on a skeleton Ni catalyst was studied at 5, 25 and 40°. The reduction speed in aqueous-alcohol solutions at 25° was $II < I < III < IV$, at 5° I was reduced more rapidly, and at 40° more slowly than the other compounds. Introduction of alkalis in the solution decreased the reaction speed. Promotion of the catalyst with rhodium increased the reduction speed of I. On a promoted catalyst,

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APPROVED FOR RELEASE: 08/25/2000

CIA-RDP86-00513R001652130006-7"

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SOKOL'SKIY, N. V.

7
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Catalytic reduction of aromatic nitro compounds. VI.
The effect of some functional groups on the kinetics of re-
duction of a nitro group over Raney nickel. V. P. Shum-
pina and N. V. Sokol'skiy. *J. Gen. Chem. U.S.S.R.* 26,
1373-8(1956)(English translation).--See *C.A.* 51, 1871b.
B. M. R.

4E4j

PM 10/6

SOKOL'SKIY, D.V.

✓
chem Hydrogenation of cottonseed oil by bound hydrogen.
D. V. Sokol'skiy and R. Z. Gumarova. *Doklady Akad. Nauk S.S.S.R.* 111, 609-12(1958).—Hydrogenation of cottonseed oil was run at atm. pressure at 150-250° in Tetralin soln., the latter acting as H donor, in the presence of catalysts: Ni-Al₂O₃, Ni-Cu-Al₂O₃, Ni-Cr₂O₃, and Ni-ZnO. The kinetic curves are shown. The reaction with Ni-Al₂O₃ is slower than with free H₂ and cottonseed oil hydrogenates only to I no. 70-1 under the conditions. Ni-Cu-Al₂O₃ behaves similarly but acts less rapidly. The activation energy of hydrogenation on Ni-Al₂O₃ with 0.364 moles Tetralin is about 8500 kcal./mole, and declines with larger amts. of Tetralin. The relative dehydrogenating activity of catalysts placed in ascending order are: Ni-ZnO, Ni-Cr₂O₃, Ni-Cu-Al₂O₃, Ni-Al₂O₃. The final I no. (70-1), results mainly from hydrogenation of linoleates to oleates and the latter remaining unaffected. Methyl oleate is not hydrogenated beyond some 18-20% in this manner.

G. M. Kosolapoff

SOKOL'SKIY, D. V.

Chem Catalyst carrier of porous material. L. K. Kovalev, D. V. Sokol'skiy, and S. R. Raikov. U.S.S.R. 104,883, Feb. 25, 1957. The carrier is made of cellular glass to increase its heat resistance and activity. M. Hosen

SOKOL'SKIY, D. V.

Distr: 4E2c(j)/4E4j/4E3d

Hydration of acetylene. M. K. Kal'fus, L. M. Tereshchenko, V. P. Simonina, and D. V. Sokol'skiy. U.S.S.R. 108,128, Oct. 25, 1957. C_2H_2 is hydrated with the aid of H_2SO_4 and Hg compds. as catalysts. For more effective use of these substances, regenerated acid contg. Hg_2O and up to 30 g./l. HgO is continually fed into the circulation tube of the hydrator. Hg and its compds. are continually withdrawn from the cycle into the part of the system where the acid is being regenerated.

M. Hosh

D.V. SOKOL'SKIY

USSR/Physical Chemistry - Kinetics, Combustion, Explosions,
Topochemistry, Catalysis.

B-9

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 510

Author : A.M. Sokol'skaya, D.V. Sokol'skiy.

Inst : Academy of Sciences of Kazakh SSR.

Title : Catalytic Hydrogenation of Some Substituted Ethylenes.

Orig Pub : Izv. AN KazSSR. Ser. khim., 1957, vyp. 1, 51-57

Abstract : The hydrogenation speed of monosubstituted ethylenes in presence of the powdered Ni-catalyst decreases in the following order: methylethylvinylcarbinol and methylpropylvinylcarbinal, 2-methyl-1-vinylcyclohexanol-1, 1-vinylcyclohexanol-1. The activation energy is 5 to 6 kcal per mole.

Card 1/1

VOLOSHIN, I.I.; SOKOL'SKIY, D.V.

Effect of purification of cottonseed oil on its hydrogenation
rate. Izv.AN Kazakh.S.S.R. Ser.khim. no.1:67-75 '57. (MLRA 10:5)
(Cottonseed oil) (Hydrogenation)

SOKOL'SKIY, D.V. SOKOL'SKIY, D.V.

3

2

Charging curves in anodic polarization with benzoquinone/ D. V. Sokol'skiy and N. M. Popova. Vestnik Akad. Nauk Kazakh. S.S.R. 13, No. 1, 80-83(1957). — Potential-time curves are shown for systems with Pt and Pd powders satd. with H and then gradually treated dropwise with solns. of benzoquinone, with best results being obtained in 0.1N H₂SO₄. This method permits the recording of the charging curves of the catalysts at the expense of uniformly added electron acceptor (benzoquinone). It was shown that the amt. of adsorbed H decreases in repeated expts. and that in the period of the "middle hold" of progress of a charging curve there takes place the detachment of relatively firmly held H. The proportion of loosely and firmly held H depends on the treatment of the catalyst. G. M. K.

PM mji

SOKOL'SKIY, D.V.; ZAVOROKHIN, N.D.

Mechanism of the action of acetylene and its derivatives during
acidic corrosion of steel. Vest. AN Kazakh. SSR 13 no.8:59-75
Ag '57. (MLBA 10:9)

(Acetylene) (Steel)
(Corrosion and anticorrosives)

SOKOL'SKIY, D. V.

Distr: $hE4j/hE3d/hE2c(j)$

The potentiometric investigation of the mechanism of the Kucherov process in sulfuric acid solutions. M. K. Kal'fus and D. V. Sokol'skiy. *Vestnik Akad. Nauk Kazakh. S.S.R.* 13, No. 9, 74-80 (1957).—The stability of the complexes of Hg compds. as they are formed in the course of the Kucherov process (hydration of C_2H_2 to AcH) was investigated potentiometrically. The complexes of Hg^{II} with AcH , as stipulated by Frieman, *et al.* (*C.A.* 31, 4951⁴) are not formed. The potentiometric as well as the analytical data indicate that 2 complexes are formed between HgO and C_2H_2 which are of different stabilities, and the concn. thereof bears no direct relation to the Hg concn. When the reaction starts the anion furnishing these complexes is $Hg(SO_4)^{2-}$. Kinetic investigations showed that this anion is not stable, and therefore the most probable mechanism of the Kucherov reaction is a 2nd-order reaction with respect to the H_2SO_4 ; thus the mechanism proposed by Schwabe (*C.A.* 49, 5001^f) is incorrect. The mechanism as proposed takes into consideration also that the rate of hydration of C_2H_2 is not at all a function of the total concn. of Hg compds., and therefore the Schwabe assumption of a microheterogeneous hydration catalyst is actually no longer necessary. 21 references.

Werner, Jacobson

DM

4
2 May
3

SOKOL'SKIY, D.V.; MELEKHINA, L.S.; PERUNOVA, L.I.

Effect of the nature of the solvent on the kinetics of hydrogenation
of cottonseed oil. Zhur.prikl.khim. 30 no.12:1799-1806 D '57.

(MIRA 11:1)

(Solvents) (Hydrogenation) (Cottonseed oil)

PA - 2896

AUTHOR: SOKOL'SKIY, D.B. Member of the Academy of Science of the Kazakh S.S.R.
DZHARMALIYEVA, K.K.

TITLE: The Dependence on the Medium of the Amount of Hydrogen adsorbed on Nickel-Skeleton and Platinum Catalyzers.

(Zavisimost' kolichestva adsorbirovannogo na nikel-skeletnom i platinovom katalizatorakh vodoroda ot sredy. Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 4, pp 860 - 862
(U.S.S.R.)

Received: 6 / 1957

Reviewed: 7 / 1957

ABSTRACT: One of the unavoidable stages of catalytic hydration is a previous activation of the reaction components on the surface of the catalyzer. The activation of hydrogen and of an unsaturated compound on this surface depends on the specific properties of the compounds to be hydrated, on the nature of the catalyzer, and on reaction conditions. A change of medium (milieu) exercises considerable influence on the strength of the hydrogen binding to the surface. By the application of various solvents it is possible to regulate the amount of hydrogen adsorbed on the surface. The present paper investigates the influence exercised by different alkali- and acid concentrations on the above mentioned adsorption in connection with the hydration of some organic compounds by the adsorbing hydrogen, as e.g. orthonitrophenol. Experiments with a nickel-skeleton catalyzer were carried out in a NaOH solution (0,01 - 15,0 n), those

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PA - 2896

The Dependence on the Medium of the Amount of Hydrogen adsorbed on Nickel-Skeleton and Platinum Catalyzers.

with platinum in NaOH and H_2SO_4 . As from table 1, the amount of water extracted from the catalyzer within 2 hours is reduced with the increase of the alkali concentration. The maximum quantity was 70 - 80 ml. As 1 g of the nickel catalyzer contains 110 - 120 ml adsorbed hydrogen, not the entire adsorbed amount of hydrogen is extracted, but only the atoms which are weakly connected with the catalyzer surface. With rising temperature the extracted amount of H increases. Orthonitrophenol was selected as a substance able to extract the total adsorbed quantity of H from the catalyzer. From table 2 it may be seen that the extracted H quantity increases with increasing alkali concentration. Illustration 1 shows the kinetic and potential curves of the orthonitrophenol hydration in the case of different concentrations of alkali and at 60° . As may be seen, the potential of the catalyzer is reduced abruptly after the introduction of O- nitrophenol in the course of the first minute, during which time also more than the half of the total quantity of hydrogen is extracted. This quantity increases with rising temperature, probably at the expense of the lower catalyzer layers. Unlike nickel, the adsorbed H quantity in the case of platinum catalyzers is nearly independent of the alkali

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PA - 2896

The Dependence on the Medium of the Amount of Hydrogen adsorbed on Nickel-Skeleton and Platinum Catalyzers.

concentration. Table 5 shows that in the case of all alkali- and acid concentrations, about the same quantity of hydrogen is extracted from platinum. (2 illustrations, 3 tables).

ASSOCIATION: Kazakhishn State University "S.M.Kirov" at Alma-Ata.
PRESENTED BY:
SUBMITTED: 5.11.1956
AVAILABLE: Library of Congress

Card 3/3

Sokol'skiy, D. V.

20-3-37/59

AUTHORS

Sokol'skiy, D. V., Member of the Academy
of Sciences of the Kazakh SSR, and Bezverkhova, S. T.

TITLE

The catalytic activity of skeleton nickel as dependent on the
conditions of hydrogen activation. (Zavisimost' kataliticheskoy
aktivnosti skeletnogo nikelya ot usloviy aktivatsii vodoroda).

PERIODICAL

Doklady Akademii Nauk, 1957, Vol. 115, Nr 3, pp. 554 - 556 (USSR.).

ABSTRACT

The catalytic properties of skeleton nickel result from the presence
of adsorbed Hydrogen. A change in its amount leads to a change in the
activity of the contact. The subject of this paper is to study the
influence of a preceding dehydration of the catalysator on the hydra-
tion velocity of dimethylethymylcarbinol in various media (NaOH,
water, ethanol) at 20, 40 and 60°C. The experimental results from the
aforesaid hydration are given in table 1 and fig. 1. From these, it
can be seen, that, according to the medium and the temperature, a
preceding partial or total removal of the adsorbed hydrogen from the
surface of the catalysator has a varying influence on the catalytic
activity of nickel. In the case of hydration in alkaline media at low
temperatures the velocity was most highly impaired because of the
dehydration. Skeleton nickel is in water less sensitive to the removal
of hydrogen. No influence at all can be remarked in alcohol. These
results can be explained by different activation velocities of hydro-
gen at the dehydrated **catalyzer**, which are dependent on the medium

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20-3-37/59

The catalytic activity of skeleton nickel as dependent on the conditions of hydrogen activation.

and the temperature. In alkaline media the regeneration of hydrogen takes place very slowly and under difficult conditions, because the hydrogen is closely connected to the surface. Thereby the reaction velocity is reduced by 63 / , disregarding the total absorption of the lost hydrogen at the saturation of the catalysator from the gaseous phase. If the medium is represented by water, the activation of the hydrogen takes place much faster and easier. From this results the negligible influence of the dehydration on the velocity. In alcoholic media, where the amount of hydrogen bound to the surface of the catalysator is insignificant, the easy regeneration of the activated hydrogen ensures a stable operating condition of the skeleton nickel. Because an increase of the temperature in the experiment has a favourable influence on the activation, the dehydration at 40 and 60°C does not reduce the reaction velocity to a considerable extent. (There are 2 Slavic references, 1 table and 1 figure).

ASSOCIATION Kazakh State University im. "S.M.Kirov", Alma-Ata. (Kazakhskiy gosudarstvennyy universitet im.S.M.Kirova, Alma-Ata).

SUBMITTED February 18, 1957.

AVAILABLE Library of Congress.

Card 2/2

20-3-27/52
 AUTHORS: Sokol'skiy, D. V., Member of the AN of the Kazakh SSR, Malakhov, V. V.

TITLE: The Method of Electric Conductivity in the Investigation of Powdery Metallic Catalyzers in the Liquid Phase (Metod elektroprovodnosti pri issledovanii poroshkoobraznykh metallicheskiikh katalizatorov v zhidkoy faze)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 455 - 457 & USSR)

ABSTRACT: In this case n-heptane is used as a solvent. The experiments were also carried out in benzene, 96 % alcohol, and icy carbonic acid. When determining the electric conductivity of the powders, a catalytic "duck" was placed upon the bottom of the cell. The resistance was measured by means of a direct current bridge. The high conductivity of active nickel powder is caused by the hydrogen it contains. In freshly prepared skeleton-nickel the resistance may vary from one to several thousand Ohms. However, powder kept for several days under alcohol is unable to conduct any current. However, if the powder is saturated with hydrogen, its resistance decreases as long as the powder absorbs hydrogen. A certain low value of resistance then results, which is here described as "saturation resistance". The resistance of the skeleton nickel is directly pro-

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20-3-27/52

The Method of Electric Conductivity in the Investigation of Powdery Metallic Catalysts in the Liquid Phase

portional to the distance between the electrodes and decreases with an increased weighing-in of powder. Analogous precipitation curves apply in the case of each weighed-in quantity, and to each curve there belongs a "saturation resistance". Also the influence exercised by oxygen, acetylene, methyl ethyl, acethylenyl carbinol on the resistance of 0,75 g of a skeleton nickel-powder saturated with hydrogen at 20° was investigated. In all cases the removal of hydrogen from the surface of the catalyzer brought about by these substances led to an increase of its resistance. Also after shaking up the powder in air resistances of millions of Ohms are attained. The temperature dependence of the electric conductivity of skeleton nickel and platinum blackening is the dependence which is characteristic of semiconductors. There are 3 figures, and 4 Slavic references.

SUBMITTED: July 1, 1957

AVAILABLE: Library of Congress

Card 2/2

20-117-5-33/54
AUTHORS: Sokol'skiy, D. V., Member of the Academy of Sciences
of the Kazakh SSR, and Fasman, A. B.

TITLE: The Dependence of the Velocity of Hydrogenation on the Amount of Skele-
ton Nickel Catalyst (Zavisimost' skorosti gidrirovaniya ot kolichest-
va skeletnogo nikellevogo katalizatora).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp. 845-847 (USSR).

ABSTRACT: The purpose of the present paper is to study this problem under model
conditions, by means of the potentiometer method. In this way, it is
possible to obtain some information on the processes taking place at
the surface of the catalyst. The hydrocarbons Hexine-1 and trans-
piperilene were used as experimental substances. The methods employed
in this examination were described in a preliminary paper (reference
7). The Hexine-1 was hydrated in absolute ethanole and in H-heptane.
The length of the linear domain of the curve, which represents the
dependence of the hydration velocity on the amount of nickel increases
with an increasing intensity of the mixing. The order of the kinetic
curves resembles the zero order in the case of this series of experi-
ments. Rules deviating a little from these were observed in the case
of H-heptane. If the amount of catalyst is small, the velocity of
hydration is proportional to a factor greater than the first power

Card 1/3

The Dependence of the Velocity of Hydrogenation on the Amount 20-117-9-55/54
of Skeleton Nickel Catalyzer.

of the amount of nickel. The specific activity of the catalyzer passes through a maximum, which shifts towards greater amounts of weighed-out nickel at an increasing intensity of mixing. The velocity of hydration is smaller with small amounts of nickel in H-heptane than it is in alcohol, with great amounts of nickel the reverse holds. In the case of a hydration of trans-piperilene in an alcoholic medium only 70 % of the amount of hydrogen theoretically necessary are absorbed, which is very probably connected with the simultaneous occurrence of secondary processes. The order of the kinetic curves approaches the first order. In the subsequent series of experiments the hydration of hexine-1 in alcohol was investigated at an unchanged ratio between the non-boundary compounds and the catalyzer. The specific catalytic activity increases with an increasing amount of catalyzer at a weak mixing, and passes through a maximum at strong mixing. With an increasing intensity of mixing the concentration of the non-boundary compound on the surface of the catalyzer decreases. The hexine-1 almost immediately deprives the catalyzer of a certain proportion of its hydrogen content. Furthermore, a parallel process takes place successively, consisting of a simultaneous hydration of the alkyne, alkene and of a saturation of the catalyzer with hydrogen from the gas phase. The measurement of the poten-

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The Dependence of the Velocity of Hydrogenation on the Amount of^{20-117-5-55/54}
Skeleton Nickel Catalyzer.

tial of the catalyzer may be employed with success for the determination of the optimum ratio between the amounts of catalyzer and of the reacting substance.

There are 2 figures, 1 table, and 14 references, 8 of which are Slavic.

SUBMITTED: June 27, 1957.

1. Hydrogenation of the Nickel Catalyzer (see Introduction)
Hydrogenation of the Nickel Catalyzer (see Introduction)

Card 3/3

NI, P.F.; SOKOL'SKIY, D.V.

Rhenium as a promoter of the catalyst nickel on silica gel in the
hydrogenation of unsaturated compounds in the liquid phase. Izv.
AN Kazakh. SSR. Ser.khim. no.1:46-54 '58. (MIRA 12:2)
(Catalysts, Nickel) (Rhenium) (Hydrogenation)

SOKOL'SKIY, D.V.; DUNINA, L.P.

Hydrogenation of sodium propiolate on skeletal nickel catalyst.
Izv. AN Kazakh. SSR. Ser.khim. no.1:55-64 '58. (MIRA 12:2)
(Propiolic acid) (Hydrogenation) (Catalysts, Nickel)

SOKOL'SKIY, D.V.; ZHAKIPOVA, A.Zh.

Selectivity of hydrogenation; hydrogenation of phenylpropionic
acid and dimethylacetylenylcarbinol. Izv. AN Kazakh. SSR. Ser.khim.
no.1:65-70 '58. (MIRA 12:2)
(Propiolic acid) (Hydrogenation) (Propynol)

YERZHANOV, A.I.; SOKOL'SKIY, D.V.

Potentiometric study of the hydrogenation of benzalacetone. Izv.
AN Kazakh. SSR. Ser.khim. no.1:71-78 '58. (MIRA 12:2)
(Acetone) (Hydrogenation) (Potentiometric analysis)

80307

SOV/81-59-7-22593

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Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 7, p 72 (USSR)

AUTHOR: Sokol'skiy, D.V.

TITLE: On the Mechanism of the Reaction of Catalytic Hydrogenation

PERIODICAL: Tr. In-ta khim. nauk AS KazSSR, 1958, Vol 2, pp 3 - 52

ABSTRACT: The mechanism of the reactions of hydrogenation of various compounds in the liquid phase in the presence of catalysts of the VIII-th group of the Periodic System was considered. It was noted that it is necessary, studying the kinetics of the reaction, to make allowance for the quantity of hydrogen sorbed by the catalyst. The dependence of the reaction rate and the potential shift of the catalyst on the solvent is, in the opinion of the author, mainly caused by a change in the bond energy of the catalyst with hydrogen. The reaction rate must be determined by hydrogenation of the substance at the expense of H_2 from the gaseous phase, extraction of H_2 from the catalyst and subsequent saturation of the catalyst. The selectivity of the process depends on the solvent and must increase with an increase in the ratio of the

Card 1/2

SOV/137-59-1-1952

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 258 (USSR)

AUTHORS: Zavorokhin, N. D., Sokol'skiy, D. V.

TITLE: Effect of Inhibitors on the Polarization of Steel in Sulfuric Acid
(Vliyaniye ingibitorov na polyarizatsiyu stali v sernoy kislote)

PERIODICAL: Tr. In-ta khim. nauk. AN KazSSR, 1958, Vol 2, pp 53-60

ABSTRACT: An investigation was performed by the polarization-curve method of the effect of acetylene, propiolic acid, thiourea, quinoline, and Fe^{3+} ions on the rate of electrode processes in H_2SO_4 . At low D (close to the stationary potential) the inhibitors named impede both cathodic and anodic processes equally. With medium D the cathodic process is inhibited to a greater extent by acetylene, propiolic acid, and quinoline, while the anodic process is impeded greatly by thiourea. The inhibitors investigated show no effect on the process of reduction of Fe^{3+} ions to Fe^{2+} in an extended range of D. Comparison of the results obtained by the polarization and the volumetric methods indicates that the problem of the process of inhibition of the dissolution of metal in the presence of various additives cannot be solved simply on the basis of the displacement of stationary potential and

Card 1/2

SOV/137-59-1-1952

Effect of Inhibitors on the Polarization of Steel in Sulfuric Acid

the shape of the branches of polarization curves.

L. A.

Card 2/2

SOV/137-59-1-1899

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 251 (USSR)

AUTHORS: Zavorokhin, N. D., Sokol'skiy, D. V.

TITLE: Effect of Triple-bond Compounds on the Electrolytic Diffusion of Hydrogen in Steel (Vliyaniye soyedineniy, soderzhashchikh troynuyu svyaz', na elektrodifuziyu vodoroda v stal')

PERIODICAL: Tr. In-ta khim. nauk AN KazSSR, 1958, Nr 2, pp 61-69

ABSTRACT: An investigation was made of the effect of acetylene (I), propiolic acid (II) [the Russian original reads "propylic acid; Trans. Ed. Note], thiourea (III) and quinoline (IV) on the diffusion of H which evolves during the cathode polarization of a steel membrane in 1N H₂SO₄. It was established that I, II, and IV retard the H diffusion, whereas III speeds it up. Addition of III produces an immediate relationship between the electrode potential and the rate of diffusion, whereas in other cases such a relationship is absent. It is indicated that in addition to the rate of discharge the energy of metal-H bond is an important factor in creating overpotential of H under nonequilibrium conditions.

Card 1/1

D. B.

POPOVA, N.M.; SOKOL'SKIY, D.V.

Hydrogenation of benzoquinone by sorbed hydrogen on skeletal Ni, Pt
and Pd/CaCO₃. Trudy Inst.khim.nauk AN Kazakh. SSR 2:70-76 ' 58.

(MIRA 12:2)

(Hydrogenation)

(Benzoquinone)

(Catalysis)

POPOVA, N.M.; SOKOL'SKIY, D.V.

Hydrogenation of benzoquinone on skeletal Ni, Pt, and Pd/CaCO₃.
Trudy Inst.khim.nauk AN Kazakh. SSR 2:84-93 '58. (MIRA 12:2)
(Benzoquinone) (Hydrogenation) (Catalysis)

DZHARDAMALIYEVA, K.K.; SOKOL'SKIY, D.V.

Effect of the medium on the activity of a catalyst and the quantity
of hydrogen adsorbed on it. Trudy Inst.khim.nauk. AN Kazakh. SSR.
2:94-111 '58. (MIRA 12:2)

(Catalysts, Nickel)

(Hydrogenation)

KARSYBEKOV, M.A.; SOKOL'SKIY, D.V.

Hydrogenation of acetylene in the liquid phase. Report No.2:
Hydrogenation of acetylene on palladium catalyst. Trudy Inst.
khim.nauk AN Kazakh. SSR 2:134-142 '58. (MIRA 12:2)
(Acetylene) (Hydrogenation) (Palladium)

SOV/81-59-7-22595

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 7, p 73 (USSR)

AUTHORS: Zhanalinova, A.N., Sokol'skiy, D.V.

TITLE: The Hydrogenation of Dimethylacetylenylcarbinol in Mixed Solvents

PERIODICAL: Tr. In-ta khim. nauk. AS KazSSR, 1958, Nr 2, pp 143 - 149

ABSTRACT: The hydrogenation rate of dimethylacetylenylcarbinol (I) at 13 - 50°C in the presence of a skeleton Ni-catalyst in binary mixtures of dioxane with water, alcohol or heptane, in the case of a change of the dioxane concentration, passes through a minimum pertaining to a dioxane concentration of 20 - 60%; the solubility of I in the same mixtures passes through a minimum in the case of compositions pertaining to the minimum reaction rate. The authors think that a decrease of the reaction rate and the solubility of I is caused by the mutual solvation of the components of the solvent leading to an increase in the adsorbability of I and to a decrease of the energy of the bond between the catalyst and hydrogen.

Card 1/1

S. Kiperman

SHCHEGLOV, N.I.; SOKOL'SKIY, D.V.

Hydrogenation of actylene to ethylene. Trudy Inst.khim. nauk AN
Kazakh. SSR 2:150-157 '58. (MIRA 12:2)
(Hydrogenation) (Acetylene) (Ethylene)